of the children attending the public schools in that city. In his report he says that "approximately ten per cent of children in attendance at the local schools are not properly nourished, either through lack of wholesome or sufficient food, and are victims of malnutrition." He also states that "a large percentage of boys between ten and sixteen years of age, are afflicted with mental dullness, as well as physical debility, as the result of taking nicotine into their lungs by means of cigarettes."

Out of 359 pupils so far examined by Dr. Foster, 155 have been found to be suffering with defective vision, 90 with poor hearing, 60 from defective nasal breathing, 122 from badly decayed teeth, 2 with defective palates, 3 with nervous diseases, 111 with adenoids, 77 with diseased tonsils, 33 with enlarged glands, and 33 with mal-nutrition.

Without going further into detail, these few facts alone, I believe, are of sufficient importance to impress you with the seriousness of a large number of these defects, that only become manifest so soon as a child enters school life. Such a condition of affairs affecting the school-child of to-day, certainly ought to impress us as health officers, particularly so those of us who are entrusted with the preservation of the public health, with the fact that it is our duty to insist on those in charge of the public schools, the absolute importance and necessity of a proper medical examination of all children now attending our public schools.

A trained observer can generally select the defective children in a school after a brief period of observation. Their mental, physical and nervous inferiority is usually evident and unmistakable. They are now recognized as a type of lesser mental defect or backwardness, differing from the truly feeble-minded only in degree of defect. The mental dullness in these cases is not a sign of mere arrested development, but is caused by some abnormality or inferiority of the brain itself. I have never seen an experienced primary teacher who, in practice, was not familiar with this type of backward child. The average teacher does not fully interpret the lack of intellectual development. It is possible that she may shrink from the usual parental indignation and protest at the suggestion that the child may be defective mentally. The teacher is apt to believe that the school failure of the pupil is caused by the voluntary and willing lack of attention and effort.

From this superficial survey of the condition of the child in our public schools, we can safely conclude: That the school life of the child at the present day, is too complex and difficult. Too many subjects for study have been introduced, and too great a thoroughness required for a young mind. This has a tendency to unbalance development and create nervous irritability. Teachers in charge of large classes, oftentimes lose sight of the important element of personal equation, the brightest child receiving the greatest consideration, while the "backward" or defective child is entirely lost sight of. Teachers commit a great wrong if they fail to recognize a defective child. This is especially true of the depraved type of children. The children in our reform schools, the great army of the police court, chronic drunkards and criminals, the tramp, vagrants, low prostitutes, are largely recruited from this class of the slightly mentally deficient who were neglected in their youth.

The physician should take a deeper interest in watching the mental defects and having children so afflicted properly classified. The physical defects, including those of the eye, ear, nose and throat, should receive more attention than is now given.

THE VALUE OF CEREBROSPINAL FLUID EXAMINATIONS IN THE DIAGNOSIS OF CHRONIC NERVOUS DISEASE.*

By H. C. MOFFITT, M. D.

The value of lumbar puncture in the diagnosis of certain acute nervous diseases, of meningitis, of ventricular or traumatic cerebral hemorrhage needs no emphasis. The work of Ravaut, Sicard, Nageotte, Widal, and more lately of Erb and Nonne has shown the importance of lymphocytosis in the spinal fluid. This pleocytosis may occur in secondary or late lues, multiple sclerosis, idiopathic epilepsy (rarely), apoplexy, or after trauma, but is marked only in tabes, general paralysis, cerebrospinal lues, tubercular meningitis, and in certain cases of hydrocephalus. As Erb writes, "Die Diagnose auf Syphilis des Zentralnervensystems durch eine ausgesprochene Lymphocytose sehr an Wahrscheinlichkeit gewinnt und nicht selten durch sie aus dem Bereich der Wahrscheinlichkeit in das der Gewissheit gehoben wird."

Normally there are only a few cells in the cerebrospinal fluid, and these are nearly all lymphocytes. Polynuclears are found only in meningitis, abscess of brain, or a few are present after the convulsive attacks of general paralysis. In lues cerebrospinalis, nearly all the cells are lymphocytes. In general paralysis or tabes there may be caudate, vacuolated or so-called Gitter cells as well as many lymphocytes. This slide from a case of cerebrospinal lues seen recently with Dr. Herbert Allen illustrates the tremendous pleocytosis that may be present.

It has been recognized of late that "increase in certain protein constituents of blood serum and cerebrospinal fluid is constant in patients with active or latent syphilis or parasyphilitic affections" (Noguchi). These proteins are particularly the globulins and euglobulins, which may be demonstrated by the *Nonne and Apelt* globulin test or by the *Noguchi* butyric reaction

In the *Nonne* test a saturated solution of ammonium sulphate is added to an equal quantity of cerebrospinal fluid, which must be free from blood. A distinct cloudiness occurring within three minutes is called a positive reaction. The papers of *Nonne* (Deutsche Zeitschrift fuer Nervenheilkunde, Bd. 36, S. 44, Journal A. M. A., July 24, 1909, p. 289) give interesting comparisons of the value of pleocy-

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tosis, the Nonne test, and the Wassermann reaction in blood and cerebrospinal fluid in many cases of tabes, general paralysis, cerebrospinal syphilis, and of chronic non-spyhilitic nervous diseases. In forty-seven recent cases of tabes, pleocytosis and the globulin test were positive in forty. Out of seventeen cases of general paralysis only one failed to give the reactions, and fifteen out of eighteen cases of cerebrospinal lues gave positive results.

In the *Noguchi* butyric reaction 0.5 cc. of 10% butyric acid in 0.9% salt solution is added to 0.1 cc. of spinal fluid, which must not contain blood. The mixture is boiled for a few moments, 0.1 cc. of 4% NaOH is added quickly, and the fluid again boiled for a few seconds. A granular or flocculent precipitate, which soon settles under clear supernatant fluid, is called a positive result. Opalescence or even marked cloudiness without precipitation is regarded as negative.

Noguchi has found the reaction positive in tubercular, epidemic, and influenzenal meningitis, in two cases of hydrocephalus: negative in epilepsy, alcoholic psychoses, senile dementia, spastic paraplegia, typhoid, lobar pneumonia, etc. It is invariably positive in cerebrospinal lues, tabes, and general paralysis. It is often positive in congenital or secondary or tertiary syphilis, but is less marked and the characteristic granular sediment may not occur for two hours instead of in ten or fifteen minutes.

The following is a short résumé of the reactions in twenty-five cases seen recently in private or hospital practice:

1. Man of 45, chancre on finger six years ago: treated by many physicians in this country and abroad the last two years as a neurasthenic: slow speech was the only noticeable symptom, but some mental failure was later apparent. No changes in pupils or reflexes, most marked pleocytosis, Nonne and Noguchi. Subsequent course has confirmed the diagnosis of general paralysis.

2. A man of thirty without syphilitic history: very marked mental decay and disturbances of speech in the last two years: slow light reaction in pupils, very lively knee jerks: marked pleocytosis with positive Nonne and Noguchi in the spinal fluid. This patient is now confined in an asylum with general paralysis.

3. Wife of patient number one, who thinks she must be infected, and who imagines she has the same nervous symptoms as her husband. No mental or somatic signs, negative Wassermann in serum: practically no cells in spinal fluid and negative Nonne and Noguchi.

4. Man with history of syphilis and scars of former eruption over forehead: many neurasthenic symptoms, and a firm conviction that he has syphilis of the nervous system: lively reflexes but no signs of tabes or general paralysis: Wassermann and examination of cerebrospinal fluid negative.

5. Man with syphilitic infection fifteen years before. Peculiar nervous symptoms lately had led to diagnosis of probable general paralysis. All tests of cerebrospinal fluid negative, and patient now apparently well.

6. Typical case of general paralysis seen in hospital. Pleocytosis marked: Nonne and Noguchi strongly positive.

7. Young man of thirty without specific history but with very marked tremor of the tongue and lips, characteristic speech changes, very lively reflexes, and two recent attacks of transient hemiplegia. There were very marked mental changes, no evidence of active lues, very marked Wassermann reaction in blood serum, and most marked pleocytosis, Nonne and Noguchi.

8. Man in hospital with cerebrospinal lues and probable tabes: pleocytosis marked, Nonne and Noguchi positive.

9. Man of 55 in hospital; old and recent iritis, optic atrophy, absent knee jerks, positive pleocytosis, Nonne and Noguchi.

10. Woman of 30 in private practice; intense hyperalgesia of trunk for six years; typical stomach crises for four years; typical lancinating pains; very marked sensory changes over trunk; positive pleocytosis, Nonne and Noguchi.

11. Girl of 13 with hereditary lues and gastric crises; positive pleocytosis and Nonne in cerebrospinal fluid, Noguchi not tested.

12. Tabes with hemiplegia (male); pleocytosis, and Nonne positive, Noguchi not tested.

13. Tabes (typical), (male), pleocytosis, Nonne and Noguchi positive.

14. Typical tabes in a man with gastric crises and a Charcot knee; pleocytosis and Nonne positive; Noguchi not tested.

15. Probable stationary tabes (male), indefinite pains, Argyll-Robertson pupils, optic atrophy; pleocytosis slight, no Nonne or Noguchi.

16. Man with cerebrospinal lues, infection twelve years ago, symptoms for some months: weakness of left leg, pains in legs; extreme pleocytosis, positive Noguchi, no Nonne.

17. Man in hospital with papulosquamous syphilide and subacute myelitis; positive pleocytosis and Nonne; Noguchi not tested.

18. Boy of 11, polyuria, polydipsia, emaciation; positive pleocytosis, Nonne and Noguchi: improvement under mercury and iodide.

19. Man of 30 with severe syphilitic infection ten years ago and many later lesions in mouth and nose; many nervous symptoms with headache and occasional neuralgic pains in occipital nerves; tests of spinal fluid entirely negative.

20. Young man with many vasomotor and neurasthenic symptoms; several attacks of severe pain in mid-dorsal nerves with girdle sensation; cerebrospinal fluid normal.

21. Young man with arteriosclerosis, headache and depression; cerebrospinal fluid negative.

22. Combined system disease; no luetic stigmata; Wassermann and cerebrospinal fluid tests negative.

23. Woman of 36 brought to hospital in coma with temperature of 40°; history of recent convulsions; tuberculosis of right apex, syphilitic ulcer on right shin; cerebrospinal fluid showed very few cells. a slight Nonne but no Noguchi; urine, specific gravity 1024 with a trace of albumin and many casts. Autopsy showed no meningitis or cerebrospinal syphilis but granular kidneys. The nervous symptoms were no doubt uremic.

24. Man of 28, epilepsy developing five years before; no history or signs of syphilis; Wassermann and cerebrospinal fluid negative.

25. Man of 29, epilepsy for five years; cerebrospinal fluid negative but a positive Wassermann in the blood serum; no history or signs of syphilis.

The tests are of most value in doubtful cases of general paralysis, tabes, or cerebrospinal lues, in which either symptoms or signs are equivocal. Or, they may help decide the importance and gravity of many functional nervous symptoms in patients with

history of lues who are suspicious of beginning tabes or general paralysis. Together with the Wassermann reaction in the blood serum and cerebrospinal fluid, they may help in determining the nature of apparent idopathic epilepsy or in distinguishing brain tumors from syphilitic disease. They must be used, of course, only in conjunction with the general clinical picture, and their value can only be properly judged after the lapse of sufficient time to accumulate many more cases than are now on record. The recent article of *Williamson* emphasizes the necessity of caution in judging of their value.

It is unwise to practice lumbar puncture indiscriminately, as it is a procedure not without disagreeable sequelae at times, particularly in neurotic patients with unstable vasomotor systems. There may be severe headache and dizziness for some days following puncture.

CONGENITAL DISLOCATION OF THE HIP.*

By HARRY M. SHERMAN, M. D., and GEORGE J. McCHESNEY, M. D., San Francisco.

At the meeting of this Society held in Fresno I reported the first of the cases of congenital dislocation of the hip that I had attempted to correct. The report was but a preliminary one and covered several cases in which the reduction had been accomplished through an incision with deepening of the acetabulum according to the earlier technic of Lorenz, and also a smaller number of cases in which the reduction had been attempted by the manipulative method of Lorenz, as it was then practiced.

I revert to this now, for I then promised to report the late results in these cases, and I can now only make a partial report because of the disappearance of all but a very few of these patients from my observation.

Of those reduced through an incision with deepening of the acetabulum I can report but one, for I cannot find the others. This was the second patient I had operated upon for the condition. The reduction has remained stable, but free motion has never been attained; in fact the reverse was noted, the hip has become progressively stiffer, the limb has gone into adduction and become shorter while at the same time a coxa vara has developed. To correct the coxa vara and lessen the shortening I some time ago did a subtrochanteric osteotomy and gave the limb good abduction, but again it is slowly going into adduction. In spite of these faults, the girl's walk is easy, though there is a little irregularity in the step; she does not tire readily and she is free from the classic deformity of a dislocated hip. She is, in short, much benefited but has not been accorded an ideal result.

As the chief late finding in this case I note that *the acetabulum is at a higher level than is normal;* that is, the deepening of the acetabulum, which involved epiphyseal lines, interfered certainly with the growth of the ilium and probably that of the ischium and pubis, as we would expect it to do in any of the long bones.

To the manipulative cases that I reported in Fresno, I can easily add all I have done. There have been thirteen hips and twelve failures. The one success has been ideal and incomparable, for the child has had vertebral tuberculosis and tuberculosis of the nondislocated hip. During his convalescence from these infections he wore a large and complex apparatus to hold the spine and the hip, and did his walking on crutches and the hip which had been dislocated, and *it never failed him.* He is now again well and of his two hips the one which had been dislocated is the better, though the other, which has recovered from the tuberculosis, is a good practical hip joint.

The remote likelihood of getting a satisfactory percentage of anatomical reductions by manipulation led me, in a child in whom the apparent reduction had immediately redislocated, to make a second reduction and then, while the bone was held in place by another, I cut down upon the hip and inspected the parts. This was done on the 28th of May, 1898, and the note, made immediately after the operation, reads: "The Lorenz operation, except that the acetabula were not hollowed out. The left hip had not been definitely replaced, a fold of capsule being between the head and the acetabulum. The right hip seemed to have been properly replaced at the time of the manipulation. In each case the capsule was sutured, on the left side it being overlapped and the upper portion stitched to the anterior part of the trochanter, on the right side a fold was taken in the capsule by the sutures. Deep catgut and superficial silkworm gut sutures. Gauze drains. Double plaster of Paris spica, legs abducted about 20° each." The last note in the history, made a year later, in April, 1899, states that an anterior reluxation had occurred on each side, so that all that had been attained was a double anterior transposition.

The obstacle of the infolding capsule was not a new discovery, for others had found it before and had described it. It was due to a constriction in the capsular ligament of the hip, which was located between the acetabulum and the femoral head. Such a capsule, removed from the bony parts, would be seen to consist of two expanded parts, one to apply to the acetabular rim and the other to envelop the femoral head and attach to the base of the neck; between these two expanded parts would be a narrow part. Bradford has called the narrow part the "hymen of the acetabulum." Lorenz called the acetabular expansion the "pocket of the acetabulum," and the narrow part was naturally the opening and, of course, smaller than the pocket. This narrow part is smaller than is the femoral head. So it is impossible to make the femoral head pass through it unless one can absolutely accurately apply the femoral head to it and press hard enough and long enough to stretch it. Reasoning theoretically, one might say this could be done; but when one has had the opportunity of putting his finger into this nar-

* Read at the Thirty-ninth Annual Meeting of the State Society, San Jose, April, 1909.